

METEORS!

A Great Shower of Falling Stars Expected Next Tuesday or Wednesday Morning.

The Night to be Turned into Day.

"The Heavens on Fiery Flames!"

The History of Shooting Stars and Meteoric Stones.

Fiery Dragons, Blazing Beams, and Glowing Torches—The Terror Which They Inspired in Times of Old.

The Science of Celestial Pyrotechnics.

Etc., Etc., Etc., Etc., Etc., Etc.

There are still living many persons who remember distinctly the grand display of meteors or falling stars which occurred on the morning of November 13, 1833. Between the years A. D. 963 and 1833 not less than thirteen displays of the same character have been recorded, and from the fact that they have been separated from each other by the third part of a century, or by some multiple of that period, it has been generally supposed that we would this year be treated to a star-shower of the most extraordinary magnitude. The great shower of November, 1833, was preceded by displays of a minor character during the month of November of the two previous years. On the 15th of November last, a similar premonitory shower occurred, first-class meteors having been seen at the Greenwich Observatory, at the rate of two hundred and fifty per hour.

The Great Meteoric Shower Expected Next Week. Professor Newton, of Yale College, has given the subject careful attention during several years past, and from his scientific calculations he has confidently predicted that "the next passage of the earth through the centre of the meteoric group will take place two hours after sunrise at Greenwich, on the morning of the 14th of November, 1866."

It has been recommended, however, that a watch be kept on the morning of the 13th, as it is possible that the moment of their greatest brilliancy may happen one day before the time predicted.

Scientific men throughout the world appear to have accepted the deductions of Professor Newton as so conclusive, that preparations have been generally made throughout Europe and the United States to make careful observations on the phenomenon, in case it should occur. In order that our readers may be prepared for this great event, we herewith present to them a careful compilation of the history of meteoric phenomena of the past.

Meteor Record of the Old Chronicles. From a curious old work, in two volumes, published in London, by T. Longman and A. Millar, in the year 1749, and having for its title "A General Chronological History of the Air, Weather, Seasons, Meteors, &c.," we extract the following catalogue of meteoric displays of various kinds:—

- Fiery Meteors, as Trabes Iulite (Fiery Beams), Dragons, Lanos, Lampis, &c.
A. D.
418. Heavens on Fiery Flames, and other Meteors.
555. Like a Spear from N. to W.
778. A Fire run thro' the Heavens.
783. A sword, 30 Nights together, Palestine.
788. England; strange Fiery Meteors seen, and fell to the Earth.
795. England; Fiery Dragons in the air, soon after followed a severe famine.
829. Trunking Fires like Stars run in the Sky.
1000. 2 Balls of Fire fell.
1012. Like a huge Tower of Fire, fell with a great Noise.
1039. Strange Beams of Fire fell.
1070. Feb. Two golden-crowned Pillars rose a good way with the Sun.
1088. Fiery Dragons, Ignis Sacre (Sacred Fire).
1094. Flashes of Fire fell from the Sky.
1099. Fiery Dragons.
1101. Fire flying.
1106. Flying Fire and new Stars seen.
1143. Balls of Fire glanced and shined.
1177. Nov. Dec. Beams, Dragons, &c.
1216. White Crosses, green Comets, &c.
1219. Dragons and a Hurricane, St. Luke's Day.
1222. Dragons.
1228. Meteors, Thunder, and Lightning all Summer.
1238. Dragons in June; a rainy Summer.
1347. Pillar of Fire at Avignon.
1350. Meteors and storm, then Drought.
1369. Many Fiery Meteors.
1389. April. Fiery Dragons.
1395. Apr. Many Dragons; all Nov. and Dec. Ignis Fatuus (Will of the Wisp).
1510. Heavens on Fiery Flames, and Meteors; rained stones from 50 to 120 lbs. each.
1520. Sept. 4. Fuz Ardens (A Blazing Torch).
1521. June 15. Billay, Balls of Fire.
1528. Apr. 24. Globes of Fire and a Prodigy.
1547. Dec. 15. Ball of Fire.
1548. Feb. 10. Fiery Meteor.
1551. Jan. 19. Germany, Globe of Fire.
1554. June 13. Balls of Fire; Feb. 19. Trabes Iulite (A Fiery Beam).
1566. Apr. Lampas Ardens.
1569. Feb. 10. Jan. 30. Trabes Ignis abroad.
1574. Sept. 14, 15, or Nov. Many meteors, no Wind nor Thunder.
1617. Feb. 7. Black Balls, with clear Rays.
1618. March 17. Paris. Many Meteors late year.
1623. May 31. Trabe Ignis; Aug. 8. Nov. 7.
1666. July 19. Trabe Ignivoma (A Torch vomiting Fire); Apr. 17. Balls; May 8. Oct. 13. Chasma.
1698. Jan. 30. Chasma, Noremberg.
1645. Oct. 3. Fiery Meteors, Breslau.
1660. Oct. 3. Sheets of Fire near Hull.

Although many of the phenomena recorded in the above table were undoubtedly nothing more than displays of the Aurora Borealis and Zodiacal Light, still the greater part were probably of a strictly meteoric character; and as it is now impossible to distinguish one from the other, we have printed the entire table verbatim.

How the Chroniclers have Described Meteoric Showers. Owing to the ignorance and superstition of the early chroniclers, all these unusual phenomena were looked upon in the light of prodigies, and some of the accounts which they have given of them are as ludicrous as they are candid.

Speaking of one of the earliest displays recorded—that of A. D. 788—it is said that "strange fiery meteors were seen in the air," in England, and we are gravely assured that they were "followed by sore famine and a Danish invasion." In these early days, this was a manifest connection between cause and effect.

Again, we are told that in 829, for several days together, "very many little twinkling fires, like stars, ran up and down in the air," and that "great tempests of wind followed." This was without doubt a regular display of meteors or falling stars.

As another instance of the superstitious manner in which these meteoric showers were looked upon by our ancestors, we take from the old work quoted from above the following description of celestial events in the year A. D. 1000:—"This Year had many Prodiges, an Earthquake, a Comet with a long and terrible Tail like Lightning. On the 19th of the Calends of January, it fell on the Earth with so great a Light, that not only these in the Fields, but People in Houses were smitten by it; for the Fissure of the Heavens sensibly vanishing, the Serpent above appeared; The two Balls of Fire which fell, one fell upon Magdeburg, and the other beyond the Abbis."

"Fiery Dragons" appear to have been quite a favorite title for these meteoric displays. Between the years A. D. 795 and 1395 these monsters appeared on no less than eight different occasions. One of the earliest apparitions of the kind recorded happened in 1088, when the "Fiery Dragon" was seen flying through the air, casting forth flames out of its mouth. Great thunder and lightning accompanied the monster in his course through the heavens, and a fearful epidemic followed soon after. One-half of all the people of England are said to have been seized with a violent burning fever, which proved fatal to multitudes. The riderpest likewise made its appearance, as we are told that a fatal murrain made sad havoc with the cattle. From this last scourge, however, the "tame fowls, such as hens, geese, &c.," escaped by fleeing to the woods. Nor were these the only dire effects of the "Fiery Dragon's" visit, as "most of the great buildings in England were consumed by devouring flames; and all sorts of misfortunes ensued, including a general famine and a fatal earthquake." It would appear that St. George, the Slayer of Dragons and the Patron Saint of England, was not in the flesh in those days, else he would surely have resumed his old and favorite pastime, and thereby saved his subjects from such sore distresses.

Among these ancient records, however, there are many accounts to which we can attach some credence. Such is that given of

The Great Meteoric Shower of 1106, and the Comet Which Presaged It.

Still the scene, according to the chroniclers, was one of frightful horrors, which have been thus vividly portrayed:—

"In Judea, this Comet was seen 50 days decreasing, as also three Suns, one on each side the true; but the mock Suns were smaller, and cast less light than the true. They had a great white circle environing them, and in it a rainbow of four colors: the bow towards the Sun, and reaching to the other two Suns. Shortly after the Stars seemed to rain down from Heaven. The heavens seemed all on fire, Sun and Moon often uncomonly deficient. Besides the falling of Stars, burning fasses (or bundles), fiery darts, and flying fire were often seen in the air; new Stars appeared; camps of butterflies—small unknown fiery worms—flow through the air, and darkened the Sun. Men, cattle, lan is, and buildings scattered much by thunder, lightning, hail, high winds, and tempests; grain and fruits were beat down and broken. Fiery battles, companies of horses, cohorts of foot, cities, swarms, and hordes of men were seen in the air. Barrenness of land from inundation, death from scarcity, plague from famine—all prevailed."

The Dire Effects of Meteors and Other Celestial Prodiges,

as is evident from the extracts which we have just quoted, was an article of faith with our ancestors. In the dark ages it would have cost more than one's life was worth to have cast a doubt upon this pet theory of ignorance and superstition. Not only would the doubter's body have been consigned to the flames, but his soul would have been given over to eternal perdition by the fiat of the Church.

Ignorance and superstition in the last generation even were not sufficiently extinct in our own country to prevent anticipations of the most disastrous consequences, as the result of the great meteoric shower of 1833. A planter of South Carolina has given the following description of the manner in which it was regarded by the negro slaves:—

"I was suddenly awakened by the most distressing cries that ever fell on my ears. Shrieks of horror and cries for mercy I could hear from most of the negroes, who were seen in the air, amounting in all to about six or eight hundred. While earnestly listening for the cause, I heard a faint voice near the door calling my name. I arose, and, taking my sword, stood at the door. At this moment I heard the same voice still calling me to rise, and saying, 'O my God, the world is on fire!' I then opened the door, and it is difficult to say which excited me most, the awfulness of the scene or the distressed cries of the negroes. Upwards of one hundred lay prostrate on the ground—some speechless, and some with the bitterest cries, but with their hands raised imploring God to save the world and them. The scene," this writer adds, "was truly a fearful one. I never did rain fall much thicker than the meteors fell to towards the earth. East, west, north, and south, it was the same."

The anonymous author of the "Chronological History of the Air, &c.," from which the above table is taken, notwithstanding the faith which he appears to have placed in the narrations of his predecessors, thus gravely discharges the "fiery meteors" from all responsibility for any disastrous effects, as far as the human race is concerned:—"From about 104 instances in the table of fiery meteors, I cannot discover them to be any forerunners or presages of general or particular calamities to nations or people, whatever indications they may be hereafter of the general conflagration."

Authentic Accounts of Meteoric Showers. Independently of the extravagant accounts of these celestial phenomena which we have thus far given, there are on record many which were written in a much more sober vein, and which are therefore entitled to entire belief. Interspersed with these are the accounts of showers of stones, and of masses of iron, and other mineral substances, phenomena which belong to the same general class and arise from the same causes. The most notable and best authenticated instances we have collected and arranged in the table which appears elsewhere in this article. We now proceed to the description of some of the most remarkable of these.

THE GREAT METEORIC SHOWER OF 1833, As it appeared at the Falls of Niagara.



TABLE OF AUTHENTIC METEORIC DISPLAYS.

Table with columns: CHARACTER, PLACE, PERIOD, AUTHORITY. Lists various meteoric events such as 'Shower of Stones', 'Shower of Iron', 'Shower of Mercury', etc., with their locations and dates.

first giving, in the following table, the dates of the most brilliant meteoric showers:—

Table with columns: Time, Place, Height. Lists specific meteoric events with their times and locations.

The Meteoric Shower of November, 472, is one of the earliest of which we have any reliable account. Theophrastus, one of the old Byzantine historians, reports that on this occasion the entire heavens immediately over the city of Constantinople appeared as if on fire with the coruscations of flying meteors. Next in order we have an account of

The Meteoric Shower of October, 902. Conde, in his history of the Arabian dominion, states that on the night of the death of King Ibrahim ben Ahmed, which occurred in October of the year 902 of our era, an immense number of falling or shooting stars spread themselves like rain over the heavens from right to left. In commemoration of this event this year was subsequently known as "The Year of Stars."

Meteoric Shower of October 19, 1202. In the following language:—"In the year 599, on Saturday night, in the last Moharrem (October 19, A. D. 1202), the stars appeared like waves upon the sky, towards the east and west; they flew about like grasshoppers, and were dispersed from left to right; this lasted till daybreak; the people were alarmed." The next noticeable event was the

Fall of the Aerolite of November 7, 1492. This occurrence took place at Ensisheim, on the Rhine. The stone was secured, and deposited in the church at that place, together with the following quaint narrative of the whole affair, drawn up at the time by order of the Emperor Maximilian:—

"In the year of the Lord 1492, on Wednesday, which was Martinmas eve, the 7th of November, a singular miracle occurred: for between eleven o'clock and noon there was a loud clap of thunder, and a prolonged, confused noise which was heard at a great distance, and a stone fell from the air, in the jurisdiction of Ensisheim, which weighed two hundred and sixty pounds, and the confused noise was besides much louder than here. There a child saw it strike on a field in the upper jurisdiction, towards the Rhine and Inn, near the district of Giscano, which was sown with wheat, and it did no harm, except that it made a hole there; and then they conveyed it from that spot and many pieces were broken from it, which the landvogt forbade. They, therefore, caused it to be placed in the Church, with the intention of suspending it as a miracle, and there came here many people to see this stone."

This narrative is confirmed by the accounts of contemporary writers. Taken in connection with the fact that the chemical composition of the stone is identical with that of other meteoric stones, there would seem to be no doubt about its character and origin. The stone remained suspended in the choir of the Church at Ensisheim for three centuries. During the French revolution it was carried off to Colmar, but it has since been restored to its old quarters, and there still remains.

The next event of the kind, of which a reliable account is recorded, was the Fall of the Aerolite of November 27, 1627. Gassendi witnessed this, and it is therefore removed beyond the regions of doubt. On this day, being in the neighborhood of Nice, he saw a burning stone falling towards the earth. When in the air it appeared to be about four feet in diameter, and was surrounded by a luminous and variously colored circle, resembling a rainbow. Its fall was accompanied by a great noise, like the discharge of artillery. On inspecting the fallen mass, Gassendi found it to be extremely hard, of a dull metallic color, and with a specific gravity much greater than that of ordinary marble. Its weight was fifty-nine pounds.

Following the table, the next noteworthy phenomenon was the Great Meteoric Shower at Quito, About 1749. On this occasion so great was the number of falling stars which were seen immediately over

the volcano of Caynbaro, that for a time the mountain was believed to be on fire. From the plain of Esloia a magnificent view of the highest summits of the Andes was presented, and there the people of the city assembled. Just as a procession of monks was about starting out from the Convent of Saint Francis, it was discovered that the blaze which lighted up the whole heavens was caused by myriads of meteoric stones, which darted hither and thither, at an altitude of twelve or thirteen degrees. Passing over several minor showers of both stars and stones, we come next to

The Great Shower of Stones at Agen, July 24, 1790. Between 9 and 10 o'clock on the evening of this day, a ball of fire was seen darting through the air with great rapidity, leaving behind it a train of light like the tail of a comet. By and by a loud explosion was heard, when there followed a scattering of sparks in all directions, and a shower of stones of various sizes, and extending over considerable ground.

This event was so unusual in that locality that the authorities determined to place on record an authentic account of all the phenomena attending it. The following document was, therefore, drawn up and signed not only by the magistrates, but by hundreds of people residing in the neighborhood:—

July 24, 1790, between 9 and 10 o'clock, there passed a great fire, and after it we heard in the air a very loud and extraordinary noise, and about two minutes after there fell stones from heaven; but fortunately there fell only a very few, and they fell about ten paces from one another in some places, and in others nearer, and finally, in some other places further and further from them, of the weight of about half a pound; most of them fell gently, and others fell quickly with a hissing noise; and some were found which had entered into the earth, but very few."

The Fall of an Aerolite in Yorkshire, December 13, 1795. was sufficient to convince the Englishmen of modern days that there may possibly have been a little truth mixed up with the poetical surroundings of the "Fiery Dragons" of which their ancestors had such a wholesome dread.

An explosion was heard by several persons in the neighborhood of Wold Cottage, Yorkshire. A shock was subsequently felt, as if a heavy body had fallen to the ground at a short distance. The actual fall of the aerolite was seen by a ploughman. It occurred at a point of eight or nine yards from where he stood, turning up the earth all around. It penetrated entirely through the soil, and was finally brought to the end of its career at the depth of several inches, in a rock of solid chert.

After being examined, the stone was found to weigh fifty pounds. The noise of the explosion was heard at a considerable distance. The next instance of this kind which we shall notice was the

Shower of Stones at Benares, December 17, 1798. The authority for this event, that of J. Lloyd Williams, P. R. S., is undisputed, and it is never set at rest the doubts which had previously been prevalent concerning the fall of aerolites. At eight o'clock on the evening of December 17, 1798, a large and luminous meteor was seen at Benares, and other points in the East Indies. A loud rumbling noise accompanied it, much resembling an irregular discharge of musketry. About the same time, the people of Krakhat, which is fourteen miles from Benares, saw the light of the meteor, and were startled by a loud explosion, and immediately after by the noise of heavy bodies falling to the ground.

No one saw the explosion, or the fall of the stones, but on the morning following the most soil in many places was found penetrated, generally to the depth of about six inches, by stones of various sizes, and of unusual but similar composition. We now come to

The Great Meteoric Shower of November 13, 1799. This was the first grand celestial display of the kind which attracted the attention of scientific men in modern times. It was observed over a vast extent of territory, extending all the way from Greenland to the equator, and as far east as Weimar, in Germany. On this occasion, the Moravian missionary, Gassendi, contending for several hours, of a shower of fiery particles, which descended on all sides as thick as snow. With an unbounded expanse of ice and snow for a background, the sight was undoubtedly one that was calculated to inspire the greatest amazement and awe.

At the time of this great meteoric display, Alexander von Humboldt was prosecuting his scientific inquiries in South America, in connection with M. Bonpland. The latter writer, who was the historian of this celebrated event, thus speaks of the shower of falling stars:—"Towards the morning of November 13, 1799, we witnessed a most extraordinary scene of shooting meteors. Thousands of bodies and falling stars, such each other during four hours. Their direction was very regular, from north to south. From the beginning of the phenomenon there was not a space in the firmament equal in extent to three diameters of the moon which was not filled every instant with bodies or falling stars. All the meteors, or luminous streaks or phosphorescent bands behind them, which lasted seven or eight seconds."

Mr. Ellicott, an agent of our Government, who at the time happened to be at sea in the neighborhood of the Florida Capes, has also given a graphic description of this "grand and awful phenomenon," as he styles it. In the latter part of the shower first attracted attention about 3 o'clock in the morning, when every one on shipboard was aroused to witness the grand spectacle. The entire heavens appeared as if illuminated by a display of sky-rockets. During the display, which did not cease until the greater light of the sun made it invisible, the falling meteors were as numerous as the fixed stars.

They appeared to traverse the heavens in all possible directions except from the east towards the west, owing to the attraction of gravitation, their pathways all inclined more or less. This shower appeared also to affect the temperature sensibly, as Mr. Ellicott's thermometer, which had averaged 80 degrees Fahrenheit, for four days previously, suddenly fell to 56 degrees. A change was noticeable in the wind likewise, which shifted from the south to the northwest, from which direction it blew almost a gale for three days in succession.

The Shower of Stones in Normandy, April 26, 1803. was a convincing proof of the theories concerning meteoric stones which at that time were becoming prevalent among scientific men. About one o'clock on the afternoon of that day, the inhabitants of the environs of L'Aigle, Normandy, observed moving westwardly through the air a fiery globe of great brilliancy. A few moments afterwards there was heard, throughout a circle of thirty leagues or more, a violent explosion, which lasted some five or six minutes. The cause of the explosion was very peculiar. It began with three or four reports like those of a cannon; then followed a rattling sound, resembling the discharge of musketry; and the last of all came a loud rumbling, like the roll of drums. A tiny uproar proceeded from a cloud rectangular in form, and apparently motionless during the continuance of the phenomenon. The vapor substance of the cloud was projected in all directions at successive explosions. That this cloud was at a great elevation from the earth, was evident from the fact that at two places, distant one league from each other, it appeared directly overhead. The explosion was accompanied by a hissing noise, like that made by a stone when discharged from a sling. The result of the explosion was the precipitation to the earth of about three thousand meteoric stones, the largest of which weighed seventeen and a half pounds. The composition

of these stones, on analysis, was found to be identical with that of those which had previously fallen at Benares. Passing over the starry showers of 1814, 1818, and 1821, we now come to the

Grand Meteoric Shower of November 13-14, 1833. This was properly heralded by showers of considerable extent, which occurred on precisely the same day of the month in the two years previous. The limits of this grand shower of stars were the entire of America on the North, the sixty-first degree of longitude on the East, the West Indies on the South, and the hundredth degree of longitude on the West. Throughout this vast extent of territory, on land and sea, the heavens were illuminated for about nine hours, and succeeded by a multitude of shooting stars of dazzling brilliancy. Their whole number has been computed at about 240,000. The precipitation of the shower was in the form of a red-hot vapor which appeared in the northern horizon at 7 o'clock in the evening, and then gradually ascended until it had reached its zenith. This vapor appeared to be very transparent, and yet it was sufficiently dense to conceal the smaller stars. At 9 o'clock the shower of meteors commenced, reaching its maximum in point of numbers and brilliancy about 4 o'clock on the morning of the 14th, although the display did not cease until daybreak.

The shower assumed three distinct forms:— 1. Most abundant were phosphorescent lines, consisting, apparently, of a succession of points, which passed along the sky with immense velocity. 2. Large fire-balls likewise darted along the heavens at intervals, describing in the course of a few seconds an arc of 30 or 40 degrees. The pathways of these fire-balls were marked by luminous trains, which were usually white, although occasionally also of the color of the prism appeared with great vividness. These trains were visible for some minutes after the fire-balls in which they originated had burst into small clouds of vapor, and in some instances they were discernible for a full half hour. Some of the balls were of enormous size. One was seen in North Carolina, and the same, or another, in Connecticut, which was as large as the full moon at the horizon.

3. The third class consisted of luminous bodies of irregular form, which appeared stationary for a considerable time. One of the largest of these remained for some time near the zenith, directly over Niagara Falls, emitting streams of light, as shown in the accompanying cut.



The meteors, of whatever form, all originated from a point a little to the southeast of the zenith. Although none of them started immediately from this point, their pathways when produced all converged, without a single exception, towards this common focus. Its position was near the star "Sammah," in the constellation "Leo," the point towards which the earth is directed in its annual revolution round the sun. Around this radiant point, no meteors whatever were visible. Another peculiarity of the shower was the fact that the radiant point remained perfectly stationary during its entire continuance, accompanying the stars in their apparent movement towards the west. This established the fact that the source of the meteoric shower was in our atmosphere. According to the calculations of the late Professor Olmstead, who was an attentive observer of the shower, their source was at an elevation from the surface of the earth of not less than 2238 miles.

Although the spectacle presented by this, the grandest display of meteors on record, was all the points where it was visible, one of the most imposing and awe-inspiring character, it appeared to the best advantage in the neighborhood of Niagara Falls. The thundering mist of the great cataract, and the thundering voice of its turbulent waters, imparted to the very aspect of the heavens an additional beauty, and inspired the hearts of those who there witnessed it with the most unbounded awe. The scene, as viewed from this point, is vividly and truthfully portrayed in the large cut which accompanies this article. It is unnecessary to go into the details of the various

Theories to Account for the Meteoric Displays which have from time to time been advanced and discarded by scientific men. It is no generally admitted that all the phenomena of this class, whether in the form of shooting stars or of meteoric stones, are of the same general character, and have a common origin. What particular origin it has not yet been settled to the satisfaction of all who have investigated the subject. But it is no longer believed, as was at one time seriously maintained by Laplace, and others as illustrious in the world of science, that the meteors which have stricken upon the earth proceed from our own volcanoes, or from those of the moon. Their occasional appearance within the limits of our atmosphere, where they are necessarily subjected to its power of resistance, as well as to the attractions of the earth, is most satisfactorily accounted for by the theory advanced by Professor Olmstead, to which Arago has lent the weight of his great name. It may be briefly summed up as follows:—

Independently of the visible planetary bodies which crowd the solar system, there are vast numbers of small and invisible bodies, or circles around the sun, either singly or in nebulous groups. The nebulous body from which the meteors of 1833 emanated, makes a revolution around the sun in nearly six months; its orbit being elliptical, and but little inclined to the plane of the ecliptic. Its perihelion, or the point in its orbit which is nearest to the sun, is just within the orbit of Mercury; while its aphelion, or point of greatest distance from the sun, is very near the orbit of the earth.

The distance of the former from the sun is estimated at 24,000,000 of miles; that of the latter at 95,000,000. The orbits of the other wandering little planets of course vary from this somewhat. But when the wandering body happens to be at its aphelion, just at the time that the earth has reached the neighboring point in its own orbit, the smaller body is subjected to the attraction of the earth, and enters its atmosphere.

The igneous state of the meteors is easily accounted for. A velocity through the air of three thousand feet per second is sufficient to raise a meteoric body to the temperature of 1800 degrees Fahrenheit, or to a vivid red heat. The average velocity of meteors being, by careful calculation, full thirty or forty times as great, their temperature would of course be increased to corresponding degree, were not a portion of it dissipated in surrounding space. That

The Shower of Next Week will take place, according to the programme laid down by Professor Newton, is necessarily involved in some doubt, which the passage of time alone can determine. Its occurrence is as certain, however, as anything so far removed from experiment and observation can be made in anticipation. The results of such observations will be noted as well as the savans to clear up many of the doubts which at present embarrass the whole subject. And whether they do blaze forth or not, it can be no possible harm